

Wildland fire: developing a public awareness strategy articulating communication and information system

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Abstract

Our team is involved in the FIRE PARADOX project. We have to set up a public awareness strategy concerning the new management of fire: the “fire paradox management”, which has the goal to be more efficient and more ecological to fight against wildland fires. In this paper we will focus on the following main question: how to disseminate information and to communicate about wildland fires in general.

First we will present a communication approach which considers the process of communication mainly in a “mechanistic” way. At this stage we will already propose a general theoretical framework which is very operational to develop a public awareness strategy in the field of wildland fires. Then we will show that it is necessary to go further by taking into account the complexity of the information system concerning communication on fire. A preliminary information system will be presented concerning communication on fire in France. And finally, because communication is human relationship we will propose to integrate the human dimensions of communication and articulate the information system with the communication strategy.

Introduction

FIRE PARADOX is a European integrated project on fire management, coordinated by Instituto Superior de Agronomia, Universidade Técnica de Lisboa, Portugal (see <http://www.fireparadox.org>). The overall objective of this Integrated Project is clearly stated as “the creation of the Scientific and Technological bases for new practices and policies under Integrated Wildland Fire Management in Europe”⁵. More precisely FIRE PARADOX aims at reducing the effects of devastating fires by using, paradoxically, fire itself. Public awareness strategies constitute a key issue since the project is innovative in a field which concerns directly many people, especially in the south of Europe, and indirectly the whole European population because of the mass media diffusion about devastating fires. So, concerning public awareness the objective is to define and propose a public awareness strategy at the

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⁵ The project full title is “An Innovative Approach of Integrated Wildland Fire Management Regulating the Wildfire Problem by the Wise Use of Fire: Solving the Fire Paradox”.

level of the European Union or/and various countries about the new management of fire: the “fire paradox management”, which has the goal to be more efficient and more ecological to fight against wildland fires.

In this paper we will focus on the following main question: how to disseminate information and to communicate about wildland fires in general. The subject is very complex. In general the theories in the communication field have shown that a communication process is complex since an effective communication depends not only on the quality and the clarity of the transmitted message, but also on the channel and finally on the receiver. In wildland fires cases we are faced with a much more complex communication since communicating about risk is difficult. Moreover many actors are involved in the communication process.

First we will present a communication approach which considers the process of communication mainly in a “mechanistic” way. At this stage we will already propose a general theoretical framework which is very operational to develop a public awareness strategy in the field of wildland fires. Then we will show that it is necessary to go further by taking into account the complexity of the information system concerning communication on fire. A preliminary information system will be presented concerning communication on fire in France. And finally we will propose to articulate this information system with the communication strategy by integrating the human dimensions of communication.

1. A first approach: the “mechanistic” communication

The “mechanistic” communication theory

In a first analysis, communication follows an apparently simple pattern which can best be illustrated by the Shannon model⁶.

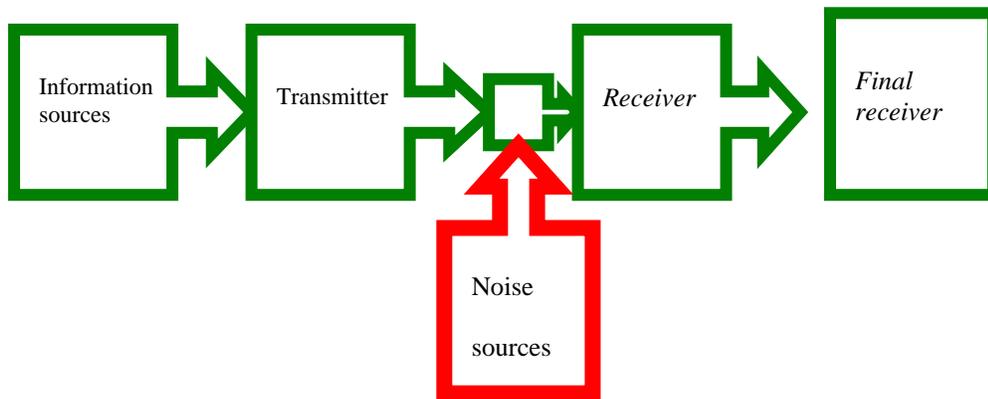


Figure 1: the Shannon model of communication

⁶ Shannon, C. E., “A Mathematical Theory of Communication,” Bell System Technical Journal, 27, July and October 1948, pp. 379-423 and 623-656.

In this model a transmitter sends out a piece of information, which is then conveyed to a receiver through an information channel, i.e. a media. The concept of information corresponds to a “mechanistic” communication. Of course the information may be distorted because of “noise”, such as a bad transmission through a cable or a satellite.

In fact, even in this apparently simple model, communication is complex since it involves a source, a process of encoding, a message, a channel, a process of decoding, a receiver, the potential of feedback and the chance of noise. The complete process is the following: a source of information gives a message to a transmitter; the transmitter codes the message and sends it through a channel. The receiver decodes the message and gives it to the final receiver.

So even with this simple model, a very preliminary analysis shows that effective communication depends not only on the quality and the clarity of the transmitted message, but also on the channel, i.e. the type of media used, and finally on the receivers. The same message will be interpreted in many different ways according to the receivers, as each receiver filters out and modifies the transmitted information.

Key points of the communication strategy in the case of wildfires

In order to analyse the process of information and communication in the case of wildfires and natural disasters, and especially in order to identify strategic information and communication, we have chosen to proceed by steps by using some theoretical bases inspired partially by the communication model of Lasswell⁷. Of course, this a first approach which gives the general theoretical framework but which will be completed later by various complementary analyses resulting from the new communications theories.

The general aim of our research is to determine key points in the communication strategy:

WHO says WHAT to WHOM, WHEN, WHERE, HOW (through which channel) and WHY

WHY: Why do we have to communicate on wildland fires and on various aspects of preventing and fighting against fires?

WHAT MESSAGE: Which information do we need to communicate?

TO WHOM: To which public?

WHO: Who diffuses which information?

HOW: What are the media (in general, not only mass media) used in the communication process?

WHEN: When will be the appropriate time to communicate?

WHERE

We can add also: at which cost? According to which criteria?

⁷ Lasswell H.C., « The structure and function of communication in society », in Lyman Bryson (sous la direction), The Communication of ideas, Harper and Brother, 1948.

We can precise some of these key points:

WHO: What are the roles of the different transmitters of information in the communication process: how fire specialists and other institutions can enhance the public awareness?

TO WHOM: the objective is to convey information to the public. But which public? Different categories of public must be distinguished according to specific criteria (geographic, socio-economic criteria, etc.) that have to be defined. For the moment a first distinction has been made between the following categories:

WHERE: a public awareness strategy about the management of fire must precise the priority zones for communicating. For example for France, our target is the southern region and areas that are affected by wildland fires; of course other areas of Europe and non-European Mediterranean countries are concerned.

WHEN: is there a priority period for communicating? There are at least three main periods each year: 1/ before the period of crisis, it is necessary to develop prevention actions, so preventive measures must be taken in winter or spring; 2/ during the crisis period, in summer; 3/ after the crisis period. Of course, the message has to be adapted to the period.

COMMUNICATION CHANNELS: we will have also to identify communication channels. Should we favour the traditional media, or ICT (information and communication technologies)? In fact it will be a mix, but with which proportions? But the question about the communication channels is very large since many people are concerned by the diffusion of information and may be in contact with the media or may now diffuse themselves information, in particular thanks to ICT.

These key points are not at all easy to determine operationally. But they show in particular that to set up an efficient communication it is necessary:

- to have clear aims and objectives,
- to identify clear targets,
- to identify who is best placed to deliver the messages,
- to choose the messages
- to manage the communication channels,
- to work effectively with the media.

2. Communication as a system: an information system concerning communication on fire in France

Thanks to the Lasswell communication model we have pointed out the key points of the communication strategy for our subject. But we must go further by considering communication not only as a “mechanics” (Who says what to whom...) but more largely as a system. Concerning wildfires there are different institutions involved at different levels and the information flows are more complex than presented in the Shannon model or even in the Lasswell model.

We have tried to build an information system on the information-communication concerning the prevention of wildfires and the fighting against wildfires; initially at the conceptual level, it is a data model of the MERISE type. We have applied this methodology to the French case. We have distinguished three main levels: the national, the intermediary level which in France is mainly the “département” level (at the present stage of our work, we consider that - concerning information flows about fires - the Regional level is the aggregation of the “département” levels), the local level (municipal level).

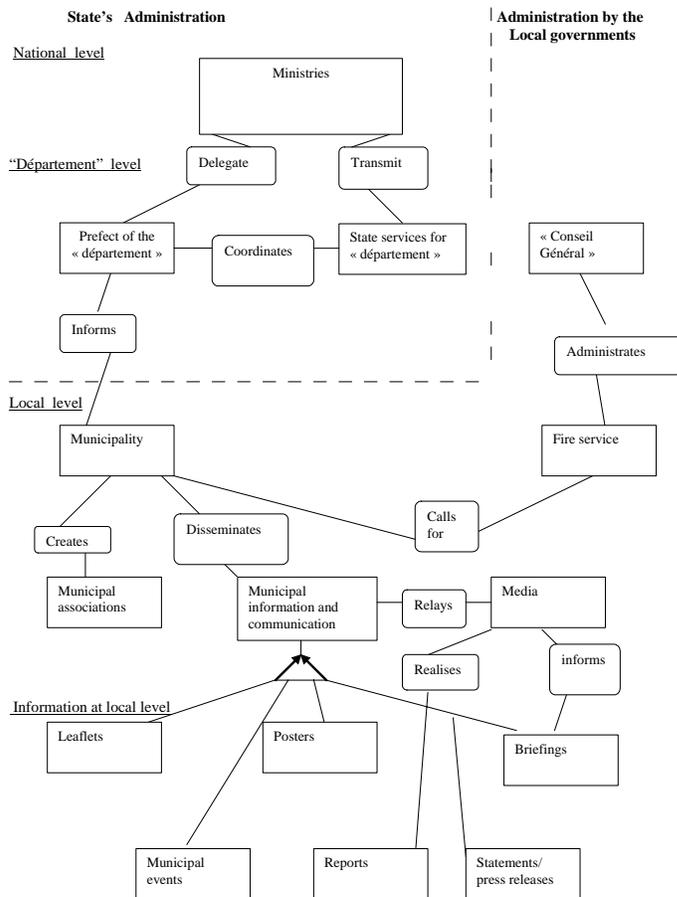


Figure 2: A simplified representation of the French information system in the field of the fight against forest fires

At the national level, different ministries (Agriculture, Internal affairs, Ecology...) are involved in the preventive actions concerning wildfires; and at the "département" level, the Ministers delegate responsibilities to the Prefect, in charge of coordinating actions of preventions with the administrative services. The prefects make sure that the laws are being applied and the Prevention of Risks Plans (PRP) are implemented at the local level of the municipalities. The "département" is managed by the elected members of the "Conseil Général". Each departmental fire service has under its responsibility different local fire stations. Mayors of town halls have the official responsibilities of organising the emergency services. According to the PRP, mayors have to disseminate information on the prevention of wildfires. At the local levels many actions concerning different targets are developed with different communication tools like, for example: leaflets, posters, municipal events, reports, official statements or press releases...

3. Communication as human relationship: Articulating the information system with the communication strategy

The complexity of a communication strategy: from a "mechanistic" communication to a human communication

We have insisted on the complexity of the information system concerning communication on fire. Many people and institutions are involved in the key points of the communication strategy which have been presented before. So even if we reason within the framework of the Shannon model or the Lasswell model, a communication strategy has to take into account this complexity. But above all a communication strategy has to integrate the idea that human relations are the core of any communication process. So we have to move from a "mechanistic" communication to a communication as a "human relationship".

From a theoretical point of view, the concept of information with the "mechanistic" communication theory was originally developed by the engineer C. E. Shannon. This approach has been judged too "mechanistic" by many authors and in particular by the Palo Alto school which introduced at the heart of its analysis the communication as a human "relation". It means that communication is mainly a question of human relations and not of technical tools or channels. Moreover the Palo Alto School has insisted on the necessity to analyse the context of a communication process. That means that the message will be interpreted in different ways according also to different elements that may influence the receiver: the material environment of the receiver (where he is...), the social environment, etc.

In fact we have first considered the mechanics of information, while taking as a starting point the model of Lasswell. We have to consider also the communication "relation", following the approach of Watzlawick. Any communication process is not reducible to a "mechanics" of information. This is especially true when the objective of the transmitter of information is to make people "aware" in a risky field. In particular, a communication process is not only a one-way process. As the receiver filters out and modifies the transmitted information, he can also react and send back

other information or share this information with other persons. It has to be noted that the media play a role in this complex communication system. And the new media offer new ways to send information without any control. So communication appears much more complex than the Shannon model suggests it. Faced to this complexity of the communication process we have to define an approach which may be, as far as possible, operational.

Articulating the technical aspects and the human aspects in a communication process

We have two levels of complexity. The current approach on communication (Palo Alto school with one of its main authors, Watzlawicz) insists on the human complexity. The information system highlights the institutional or organisational complexity. So, in order to communicate efficiently it is necessary to articulate the technical aspect of the data base of an information system with the human dimension of the communication process. We have to insist on the fact that communication depends of course of the information system: if there is a problem somewhere in the information system, information may be biased or not conveyed to the good decision maker for example. But this is not only a question of data base and technical management of the information system. We can refer to the definition of communication given by the Freedom of Information Act: "Building relationships with others, listening and understanding them, and conveying thoughts and messages clearly and congruently; expressing things coherently and simply, in ways that others can understand, and showing genuine knowledge, interest and concern; bringing these aspects together to make change happen".

At this stage of our research we would like to insist on two important stakes linked to human relations in order to have a successful communication.

First, communication could influence attitudes. An attitude corresponds to a "mechanic" way of thinking. Usually most people hold a neutral attitude toward a particular issue. Only few people expresses strong opinions (support or opposition). The result of a communication strategy depends on the degree of support of the population: the goal is to convince those who have a neutral position. People are easily convinced if they think that the project goes in their own interest.

Secondly, it is not enough to influence the attitude of the public; it is also necessary to succeed in changing the behaviors. Then only the communication strategy will have been effective.

Conclusion

Our paper started with the "mechanical" model of communication (Shannon) and then developed the analysis with the classical model of Lasswell. The main theory of communication (Watzlawicz) insists on the human dimensions of communication. We have introduced a new approach integrating the information system. The complexity is not only due to human relations but also to the administrative, organisational principles which determine information flows. So an

effective communication has to be based on a precise information system and also to integrate human relationship.

This aspect is all the more important as the new media and the applications related to Internet (in particular with the communities of users) make the system even more complex. This is why it is necessary to obtain the support of the public and to have, as far as possible, a simple and efficient information system.

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